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ABSTRACT

This review cites documents and journal articles previously announced in the ERIC catalogs regarding the conventional aspects of site development, as well as some new trends in schoolhouse design. Economic necessities and changing educational practices suggest that the traditional concept of the school as a separate island within the community is disappearing, and that the entire city should be treated as a "site" for learning. The review briefly identifies representative literature that may help educators and planners understand how some of the current radical facility options pertain to new approaches in site development. Also reviewed are discussions on the design and use of sites for environmental education, unique design solutions for restricted or irregular sites, and more conventional site development issues such as landscaping, traffic safety, and spece allocation. (Author)

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# Site Development

Alan M. Baas

Developing a school site today is a much more complex task than it was a decade ago. Rising land costs and growing interest in school-community interaction are causing radical changes in the design and use of both the schoolhouse and its site.

The school is disappearing as a separate island within the community. Perceiving this trend as indicative of a "permanent and revolutionary" change in the conception of education, Clinchy (1972) observes that educators are realizing

> . . . that we may have made a mistake in isolating education from the rest of the world, and especially from the life of the immediate community that surrounds the school. Perhaps what children need is not just to learn to read, write, and figure, but also to grasp what the larger society is all about, to experience it as it really is, and to begin to understand how it operates and what their place in it might be.

Motivated by economic necessity and concern for bringing education into a more realistic correspondence with modern society, districts are today experimenting with everything from scattered "satellite" schools serving local neighborhoods to vast educational parks accommodating thousands of students of all ages.

School and city functions were more distinguishable during the suburban construction boom of the 1950s than they are now. When the school was considered a single-purpose and part-time establishment separate from the rest of the com-

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munity, it was fairly easy to gather the information necessary for adequate site development. Manuals written seven to fifteen years ago discuss many aspects of the planning, engineering, and landscaping of school sites that are still necessary for today's educational facilities.

More recently, however, issues of site development and building design—particularly in relation to the inner city—have become entangled with broader concepts of educational and city planning. Various new considerations make it more difficult to generalize about techniques and materials for site development:

- accommodation of school-community activities—adult education, vocational training, indoor and outdoor recreational events, and possibly community services such as
- health and welfare agencies
- adaptability to changing educational and community needs
- feasibility of sharing facilities with other organizations for economic and/or community service programs
- development of innovative educational programs and facility designs to fit the limited and irregularly shaped sites that are often the only land available for urban schools
- ecological and environmental implications of site location and development, and potential opportunities for environmental education

These factors are part of a general trend toward viewing the entire city as a potential "site" for learning.

Much of the literature that discusses integrating the school facility with other aspects of the community is not properly within the topic of site development. However, because one consequence suggested by this literature is the eventual disappearance of the school and its site as a separate entity, representative documents on alternative school-community facilities are briefly described.

Also receiving attention are unique building solutions developed in response to particular sites, ways of designing and using land for environmental education, and more traditional aspects of site development.

Nineteen of the documents surveyed in this review are available from the ERIC Document Reproduction Service. Complete instructions for ordering appear at the end of this review.

## THE SCHOOLHOUSE AND THE COMMUNITY

While schools are opening to community-related activities, many school programs are taking advantage of the city itself as a vast learning facility. One dramatic example of publications that explore the city's educational potential is the *Yellow Pages of Learning Resources* (Borowsky and others 1972). To demonstrate ways in which one may learn from city resources, the authors catalog and describe seventy different categories of people, places, and processes. Based on the assumption that "everything we do—if described, made clear, and made observable—is education," the document provides numerous "idea teasers" to educators and facility planners seeking to foster student participation in the community.

Devoted entirely to the changing role of the schoolhouse, a recent issue of *The National Elementary School Principal* (September 1972) contains useful perspectives on bringing school and community closer together. In his editorial, Paul Houts observes that "the city is the schoolhouse and all who live within our cities are our teachers." He predicts tomorrow's school facility will not be a "style," but rather

> a wide array of options, bounded only by the needs, interests, and resources of the people it serves. We may not always be able to readily identify it as we move from area to area. But like any true center for learning, we will all be a part of it.

This opinion is reflected by numerous articles in the issue forecasting trends in school design and evaluating specific cases of community-school programs and facilities.

## Alternative Facilities for School-Community Interaction

Major facility alternatives for economically integrating school and community functions are *found spaces, joint occupancy, educational parks,* and *relocatable buildings.* Recent literature shows a preference for found spaces and joint occupancy as offering the widest range of educational and community benefits. The educational park provides a unique opportunity for school children from widely different neighborhoods to mingle in a "student village" atmosphere. Perhaps because of its sheer size and cost, it is not currently receiving much attention. Relocatables, on the other hand, are becoming increasingly popular for taking advantage of "instant spaces" either on various school sites or in other parts of the city without incurring additional capital expenses.

The conversion of such spaces as may be "found" in abandoned commercial structures can create economical learning environments that are also highly adaptable to changing educational and community needs. *Found spaces* located in factories, warehouses, hotels, and storefronts are currently in use to shelter entire schools, dispersed resource centers, Head Start programs, and administrative facilities (Clinchy 1972).

In the very near future, found spaces may also provide "experience centers appropriate to enriching city life" where, "in the process of learning arithmetic, civics, and biology, the children could both physically and spiritually improve the city itself" (Perkins 1972).

Sasserath (1972) reports that the special facilities of a large residential hotel can provide a unique setting for an innovative high school in New York City. A variety of found spaces and "scrounged" equipment that may be used for children's centers are described in a publication by Passantino (1972). Further information on conversion of found spaces appears in a report on places and things for experimental schools (Molloy 1972).

The concept of *joint occupancy* (also known as "shared facilities" or multiple-use buildings) involves combining schools with apartment dwellings, commercial space, or community services and offices. Many leading educators and economists recommend this approach as a solution to urban facility needs. Although it presents complex legal issues in some states, the concept is attractive because of its potential for providing needed schools and at the same time expanding the city's tax base.

A well-illustrated report by Clinchy (1970) presents ten specific cases of schools cooperating with other parties to construct

and share facilities. In addition to the obvious financial benefits of sharing facilities, joint occupancy suggests a solution to many urban problems by blending schools with community facilities serving varied ethnic groups and income levels:

> Whether the idea is simple economic self-interest, the preservation of housing, or building new kinds or urban communities, the principle is roughly the same: how to use scarce land to the greatest public and private advantage . . . To survive, schools must contribute significantly to the physical as well as the human renewal of cities.

Found spaces and joint occupancy are among alternatives recommended in New York City's comprehensive plan for meeting school facility and site needs (Lieberman 1972). Other options include small primary and intermediate schools on scattered sites, renovation of older facilities, consolidation and recycling of underused elementary schools for use as small high schools, and extended use of existing facilities. Names and addresses of school personnel and planners associated with the various approaches supplement the text.

An Educational Facilities Laboratories (1966) pamphlet describes several practical alternatives for transforming the schoolhouse into a community-oriented center. In addition to found spaces and joint occupancy, the document discusses facilities constructed over public roadways and waterways (often in connection with joint occupancy projects), development of centralized educational parks, and citywide deployment of relocatable building units. Detailed references to specific examples of facility alternatives offer a useful summary of how the changing nature of society is affecting the city schoolhouse and its site.

The *educational park* gathers a cluster of schools serving thousands of elementary and secondary students and occasionally including junior colleges. Location on a single, park-like site permits exploration of a variety of new relationships between school and community. The extraordinary size also provides room for experimentation with several different facilities designs. Selected evaluations, case studies, and project reports pertaining to educational parks may be found in a bibliography by Klebe (1969).

Several excellent documents on use of *relocatable buildings* for "instant space" are discussed in an earlier review in this series (Baas 1973a). When considered together with found spaces, the temporary structure suggests still more ways of interlacing educational programs and city processes.

## Designing for Unusual Sites

As the school becomes more an expression of the unique characteristics and needs of its community, it becomes more difficult to summarize specific examples of school design. Literature in the preceding section gives some indication of the kinds of alternative facility site options available for school use. In the following section, several journal articles describe schools designed to meet the unusual requirements of limited or irregular sites.

One traditional problem in city planning has been that minority communities are frequently separated from other parts of the city by major roadways or railroads. A *School Management* article ("Tunnels Used in Community School Plan" 1972) describes a school design incorporating tunnels under both a superhighway and a railroad track to utilize otherwise unusable land. The tunnels house both educational and community

facilities and create neighborhood ties in an area undergoing urban renewal.

An earlier issue of *School Management* ("Make-Do Site Makes an Unusual School" 1971) reports on a unique solution for a suburban "found space." The article explains how an elementary school was designed to fit a rocky, sloping site that would not accommodate conventional building solutions. A split-level plan with corridor bridges housing stair towers resolves the site's limitations and provides an educationally interesting environment as well.

A two-thousand-pupil high school constructed to fit a long, narrow site sandwiched between a state highway and a steep embankment receives attention in a recent issue of *Progressive Architecture* ("Along the Way" 1972). Photographs and floor plans supplement discussion of the architect's solution for various aesthetic and functional problems posed by the site.

An article in *School Management* ("The Air-rights Concept. . ." 1973) discusses problems in joining two small sites by use of air rights over a freeway. In addition to building over the freeway, construction of the new high school required filling in a nearby creek and relocating an exit ramp. Conflict between excessive traffic noise and use of windows for ventilation was the major difficulty of the air rights portion of the school.

Two New York architects discuss their experiences with air rights construction in a March 1973 issue of *Progressive Architecture* ("Architectural Acrobatics"). Air rights conventionally refers to "piggyback" construction of one building directly over either another building or over public areas such as roadways or rivers. The architects agree that this type of construction frequently has more hidden problems than advantages. Instead, they recommend "contiguous" projects as eliminating some of the expensive engineering costs of piggyback buildings.

A contiguous solution depends on city ordinances defining how much volume may be built on a given plot and whether unused volume from one piece of land may be transferred to an adjacent building. When possible, joint occupancy projects can be built with school buildings girdling highrise income-producing structures. An added advantage of this approach is that the roof of the school may serve as a playground.

Innovative school facilities that respond to the special demands of European urban environments are examined by McLeod and Passantino (1968). They outline individual and mutual problems encountered in constructing and locating various schools and describe the educational programs and characteristics of each urban area. Examples of unusual solutions to restricted sites include use of air and water rights and construction of schools six to ten stories in height. Extensive descriptions, plans, sections, and photographs illustrate each school examined.

## Sites Enhancing Environmental Awareness

Many of the facility options discussed earlier in this review were conceived to improve student opportunities for realistic encounters with their urban environment. The following documents reflect this concern but focus on helping students become aware of the relationship between man-made and natural environments.

Two pamphlets by the Soil Conservation Service discuss outdoor instruction and uses of outdoor classrooms to allow chil-

dren to learn directly from their natural environment. The first (1969) describes several procedures for developing outdoor land laboratories and identifies possible school and community uses for such facilities. It also gives information on landscaping and sources of help in initiating and maintaining the school site.

The second document (1972) presents ideas for developing and using outdoor classrooms that can be applied to any school site, regardless of size or location. Discussion of comprehensive use of school sites is supplemented with sources of professional help for relating conservation practices to learning opportunities.

Wilson and Brown (1965) view the school site as a long-term public investment and suggest how to gain instructional and community benefits from its natural resources. In addition to enhancing its beauty, careful development of a school site can be helpful in such programs as conservation education, botany, forestry, and geology. The authors recommend the ideal site include at least fifteen acres of recreationally developed land. They also offer a checklist of various funding and assistance sources for acquiring and developing school sites.

Planners concerned with designing schools and sites that will encourage environmental awareness may find useful ideas in a recent publication by the Educational Facilities Laboratories (1972). The document describes the use of school, community, and wilderness facilities for environmental education. Its detailed recommendations outline an important trend in educational programs that must be considered in future school and site design.

To show how buildings and sites can be made "revealable" and accessible to students, examples are given of potential settings for student learning. These vary from basement boiler rooms to courtyards converted into miniature ecosystems and to adjacent acreage provided with ponds, natural vegetation, and even small wildlife of the region. Receiving equally detailed attention are urban, suburban, and rural resources for environmental education. Discussion of resident and nonresident regional centers for learning in parks and wilderness areas is supplemented by descriptions of various arrangements used for financing such programs.

Development of landscaped courtyards can, according to Gary (1972), relieve monotony and furnish maintenance-free study and gathering areas. They can also serve as excellent links between existing buildings and new additions. Good spots for such courts may be enclosed or semi-enclosed areas near main entrances, at major walk intersections, or on points of land overlooking a view. To reduce costs, Gary recommends use of local, durable materials. Vandalism, he notes, need not be a problem if the courts are truly designed to serve the student.

## Traditional Site Development and Landscaping

Illustrated recommendations for the selection, development, and utilization of school sites appear in an early report by Taylor (1962). He discusses many aspects of long-range and functional site planning and describes procedures for determining specific site requirements. Layouts of school sites showing the location of buildings, landscaping, and activity areas supplement his presentation.

A study published by the California State Department of Education (1966) gives information for determining the site size of

a school designed to serve a specific enrollment size and grade-level range. Site factors include land for outdoor physical education, developed building site, parking and access roads, and a percent factor for layout. Site requirement categories used by the study were small schools (fewer than seven classrooms), elementary grades, grades seven through nine, and grades nine through twelve. Supporting this data are diagrams of space modules representing various facility layouts that may be developed in proportion to enrollment sizes. To assist in site analysis, the document briefly lists procedures for site plan development and outlines the essential data for a site survey.

Bruning (1963) briefly discusses planning school grounds to minimize maintenance efforts and costs. Factors affecting grounds maintenance are accessibility, site size, topography, exposure, and soil conditions. Also considered are site planning, maintenance materials, lawn development, and selection of maintenance equipment.

The careful planting of trees, according to Winant (1964), provides comfortable outdoor teaching areas. From the standpoint of initial investment and consequent maintenance, trees are an inexpensive complement to normal building devices for shading, ventilation, and external noise insulation. Well-planted sites increase the aesthetic value of the neighborhood and provide living materials for botany studies. Winant includes information on planting and caring for trees, discusses the qualities of useful shade trees, and provides sketches and photographs of sample situations.

Additional materials pertaining to landscape design and maintenance can be found in two manuals compiled by the Pennsylvania Agricultural Experiment Station (1968a and b). Intended for use in vocational training, these documents provide comprehensive treatment of many kinds of landscaping problems and solutions. Photographs, drawings, sketches, and technical data supplement each text.

To ensure better traffic safety on and around the school site, George and Gilliland (1966) recommend locating the building on the corner of the site and limiting site access to two sides. As further precautions against traffic accidents, they suggest separating pedestrian and vehicular traffic wherever possible and regulating street parking and crosswalks. They also give formulas for determining faculty and student parking needs and advise giving parents copies of the school traffic plan.

Two previous reviews in this series may provide additional materials related to site development. A survey of site selection information (Baas 1973c) contains criteria and techniques that may also be used to evaluate the planning stages of site development. Documents concerned with planning and engineering school outdoor athletic areas are included in a review of physical educational facilities literature (Baas 1973b). Other related materials may be found listed in ERIC's catalogs under the terms **Park Design**, **Parking Facilities**, and **Playgrounds**.

To gather the documents in this review, *Research in Education* and *Current Index to Journals in Education* monthly catalogs were searched from January 1968 through March 1973, using as search terms these descriptors: **Land Use, Landscaping, Site Analysis, Site Development**, and **Turf Management**. Those documents indicating the expanding scope of facilities alternatives were located by searching under the terms **Building Conversion, Educational Complexes, Educational Parks, Facility Case Studies, Facility Expansion, Space Utilization, Urban Environment**, and **Urban Schools**.

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